

**The Impact of the Global Crisis on Sub-Saharan African Countries:
Does Commodity-Dependence Create Poverty Traps?**

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Abstract

The paper investigates the impact of the 2008-10 global crisis on low-income countries that exhibit the specific market structure of relying on raw commodities for their exports. These countries were particularly hit by the last commodity boom (2002-08), which was followed in 2008-09 by a slump and the most severe global recession in 50 years as well as steep price volatility and decline. The detrimental consequences of commodity-based export structures on growth have long been underscored, channels being the secular decline and volatility of commodity prices and the fluctuations of global demand. Focusing on commodity-dependent Sub-Saharan African countries, the paper goes further and argues that the impact of the 2008-10 crisis and more generally, these countries’ growth trajectories, can be understood through the concept of the poverty trap, in which commodity-exporting low-income countries are caught. Trade policies such as openness and regional integration, and monetary arrangements with developed countries such as the West African Economic and Monetary Union/WAEMU (with the Euro zone), are not likely to modify this export structure and its associated vulnerability to external shocks: commodity-dependent countries’ vulnerability (and stability) indeed stems from factors where these policies have limited influence, which is to say, the volatility of prices formed in international commodity markets that are integrated with other markets (especially financial), and variations in growth rates and demand in importing countries (EU, USA, and the larger emerging countries). The paper therefore highlights the concept’s key features: processes generating multiple equilibria, lock-in effects that reinforce themselves, cumulative causation, threshold

effects and ‘tipping points’ that certain countries do not have the capacity to reach. Arguing that these countries are caught in poverty traps is not trivial, because commodity-based traps remain debated: some countries have grounded their growth on the export of commodities, and the impact of commodity price fluctuations may be analysed with other concepts (e.g., cycles). Against these views, the paper argues that the 2008-10 crisis is a further example of the processes that may lead to the formation of poverty traps. It shows that the effects of the 2008-10 recession, and these countries’ growth trajectories more generally, exhibit the three key theoretical features of poverty traps: low equilibria, cumulative causation and threshold effects. Finally, the paper underscores that different equilibria and bifurcations towards growth are possible, as these features do not result from commodity dependence alone, but from the combination of this export structure and other determinants, in particular local institutions.

Keywords: financial crisis; commodity dependence; poverty trap; Sub-Saharan Africa.
JEL: O10; O43; O55.

1. Introduction¹

The understanding of the impact of the 2008-09 financial crisis on low-income countries is not just an empirical question but a theoretical one as well. Many low-income countries are commodity-exporters, and many commodity-exporters can be viewed as commodity-dependent countries. The impact of the crisis on countries that exhibit this specific market structure is therefore an important question.

Commodity-dependence is indeed a major factor of vulnerability for these countries’ fiscal balance and macroeconomic management, because commodities – be they fuels, mineral or agricultural products – are characterised by price volatility and the fluctuation of global demand for them. Price volatility has been amplified during the last commodity boom (2003-08) by the growing linkages between the commodities markets and the financial markets, with commodities increasingly traded as financial assets. The boom was followed by a slump and the most severe global recession in 50 years. This price volatility was particularly acute at the onset of the crisis in the second-half of 2008, and in 2009 commodity-dependent countries have been fully hit by price declines and the global recession.

¹ Previous and different versions were presented at the Development Studies Association (DSA) Annual Conference, University of Ulster, 2-4 September 2009, and the 4th Annual Conference of the GARNET network, Rome, CIDEI (Sapienza University), FAO, 11-13 November 2009. The author is especially grateful to Machiko Nissanke for her highly relevant comments. She also thanks the panels’ other participants, as well as Raymond Toye, although the usual caveat applies.

The detrimental consequences of export structures based on commodities have long been underscored, and they explain the lower growth of commodity-dependent low-income countries, channels being the secular decline and volatility of commodity prices— as demonstrated by Raul Prebisch, Hans Singer and Alfred Maizels. Such structures prevent industrialisation, which is a way out of poverty, since industrial products' prices are less subject to volatility than those of commodities.

The paper focuses on low-income commodity-dependent Sub-Saharan African (SSA) countries². It argues that beyond commodities' specificity (e.g., oil, non-oil), the impact of the 2008-09 global crisis may be analysed according to an additional, but complementary, approach, that of the poverty trap. The concept of the poverty trap has been defined through different notions – multiple equilibria, cumulative causation, feedback processes, irreversibility, spillovers, lock-in and threshold effects. Poverty traps are self-reinforcing and reveal the existence of 'tipping points' above which long-run growth could be triggered, but that certain countries do not have the capacity to reach. The paper underscores that commodity-dependent low-income countries are caught in poverty traps that involve low productivity and exposure to external shocks, which are fostered by the volatility of their exports' earnings and often create irreversibilities.

Arguing the relevance of the concept of the poverty trap is not trivial. Indeed, some studies underscore the growth of some commodity-exporting countries. Others emphasise that traps may be created by factors other than commodities. Other studies refute the existence of traps and analyse the impact of commodity price fluctuations through different concepts: the demand for commodities, and therefore prices, follow cycles (linked to importing countries' income and product cycles, for example), as industrial and emerging countries need certain commodities as inputs for their industries; these cycles are complicated by transmission effects across products and markets (including financial markets), but they can be investigated without the concept of the poverty trap; in commodity-dependent low-income countries, growth closely follows the fluctuations of commodity prices, resulting in growth accelerations or collapses that are not 'traps'.

Against these criticisms, the paper argues that the 2008-09 crisis is a further example of processes that may lead to the formation of poverty traps and show the explanatory power of the concept. It shows that the impact of the 2008-09 crisis, and more generally, these countries' growth trajectories since their independence, exhibit the three key theoretical features of poverty traps: low equilibria, cumulative causation and threshold effects. The paper also suggests a broader understanding of the concept of commodity-based traps: it argues that different equilibria, including bifurcations towards growth,

² For the UNCTAD Handbook of Statistics (2008c, p. xv), low-income means a 2000 per capita current GDP below US\$ 1,000; over 50 SSA countries, those being middle-income (2000 per capita current GDP between US\$ 1,000 and US\$ 4,500) are: Botswana, Cape Verde, Equatorial Guinea, Gabon, Namibia, South Africa, Swaziland. For the World Bank, low-income means a 2008 GNI per capita of \$975 or less; it puts in the lower middle income category (\$976-\$3,855) several SSA countries that are low-income for UNCTAD - Angola, Cameroon, Rep. of Congo, Côte d'Ivoire, Djibouti, Lesotho, Nigeria, Sao Tome, Sudan (World Bank website, data and statistics, country groups).

are possible, as these features do not result from commodity dependence alone, but from the combination of this export structure and local institutions.

The paper is structured as follows. Firstly, it highlights the extreme price volatility that occurred in 2008-09 and its detrimental impact on commodity-dependent countries. Secondly, it summarises the main theoretical features of the concept of poverty traps. Thirdly, it examines the critiques regarding the very existence of poverty traps. Fourthly, against these critiques, it argues that the impacts of the crisis may be understood via three key properties of traps - low equilibria, cumulative causation and divergence, and threshold effects -, and that trade policies such as openness and regional integration, and monetary arrangements with developed countries (such as the Franc zone), are not likely to modify this export structure. It finally underscores that the focusing on the causal effects of commodities does not necessarily mean determinism, as other factors, in particular domestic institutions, combine with the relationship between commodity dependence and growth, which counters - or in contrast reinforces - the formation of traps.

1. The 2008-09 global crisis: a confirmation of the detrimental impacts of commodity-dependence

Low-income countries as commodity-dependent countries

Most low-income developing countries are characterised by their dependence on commodities for their exports and their lack of economic diversification, particularly in SSA, where, for example, since the mid-2000s fuels represent more than half of exports (IMF, 2007, table 4.1).

Commodity dependent countries have an undiversified export structure and export a very small number of primary products. UNCTAD (2008a) thus builds a dependency rate, which is defined as the average share of the four main commodity exports value, of the value of total exports for the period 2003–2005. A dependency rate above 50% implies that more than 50% of earnings from exports come from the four commodities. It finds that more than half (78) of all developing countries rely on four commodities for 50% of their exports earnings, and 31% rely on four commodities for more than 75% of their export earnings. Significantly, countries with a dependency rate above 80% are West African countries and Western Asian countries, because they export oil. Agricultural products such as cotton, cocoa and coffee create high dependence, some SSA countries (Benin and Burkina Faso) exhibiting a dependency rate above 65%.

Table 1: Commodity dependence by geographical region, 1995–1998; 2003–2006
(number of countries where exports of commodities account for more than 50% of total exports)

	Total primary commodities (a)		Three or less commodities		One commodity	
	1995–1998	2003–2006	1995–1998	2003–2006	1995–1998	2003–2006
Developing and transition economies	118	113	82	84	47	50
Developing economies	108	103	78	78	45	46
Africa	46	45	37	34	21	23
Latin America	30	27	15	17	6	7
East and South Asia	7	8	4	6	1	2
West Asia	9	9	9	9	8	6
Oceania	16	14	13	12	9	8
Transition economies	10	10	4	6	2	4
<i>Memo items</i>						
Least developed countries	38	38	31	31	19	20
Heavily indebted poor countries	38	36	30	28	15	15

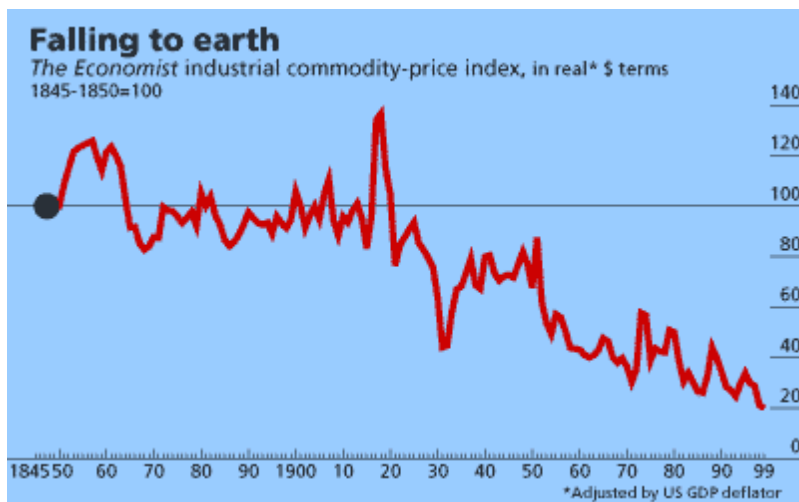
Source: UNCTAD (2008b), table 2.4, based on UNCTAD secretariat calculations, based on UNCTAD Handbook of Statistics database. (a) Primary commodities: SITC Rev. 2: 1 to 4 plus 68, 667 and 971.

The long-term decline in commodity prices

As is well-known, the correlation between economic stagnation and commodity dependence has been first highlighted by Raul Prebisch and Hans Singer in the 1950s, who demonstrated the secular decline in world real prices of commodities and the deterioration in the terms of trade for developing countries vis-à-vis industrialised countries – the deterioration in the terms of trade of commodities vis-à-vis manufactures (Pfaffenzeller *et al.*, 2007). They viewed this as a proof of the necessity of industrialisation, as increasing productivity and technical progress are major factors of growth (Prebisch, 1959).

In 1999, the composite index of commodity prices built by *The Economist* in 1864, illustrates a continuous decline since 1845: in 1999, the industrial commodities index had fallen to a record low in real terms, i.e. 80% below its level in 1845 (1845=100, and 1999=20) (*The Economist*, 1999). Using the same index over 1862-1999, Cashin and McDermott (2002) confirm the downward trend in real commodity prices by about 1% per year over that period, with little evidence for a break in this long-run trend.

Figure 1. The long-term decline in commodity prices



Source: *The Economist*, 15th April 1999.

Maizels (1984, 1987) also revealed that over the long term, the trend in the commodity terms of trade deteriorates for theoretical reasons, due to three key factors: the low price-and-income-elasticities of demand for commodities vis-à-vis manufactures; the technological superiority of developed countries and the economic power of their transnational corporations, which allows these countries to capture excess profits in trade with underdeveloped areas; the asymmetrical impact of labour union power in developed countries and labour surplus in developing countries on the division of the benefits of increased productivity. This negative relationship between growth and reliance on primary products is even found within developed countries (e.g., across regions within the United States, Papyrakis and Gerlagh, 2007).

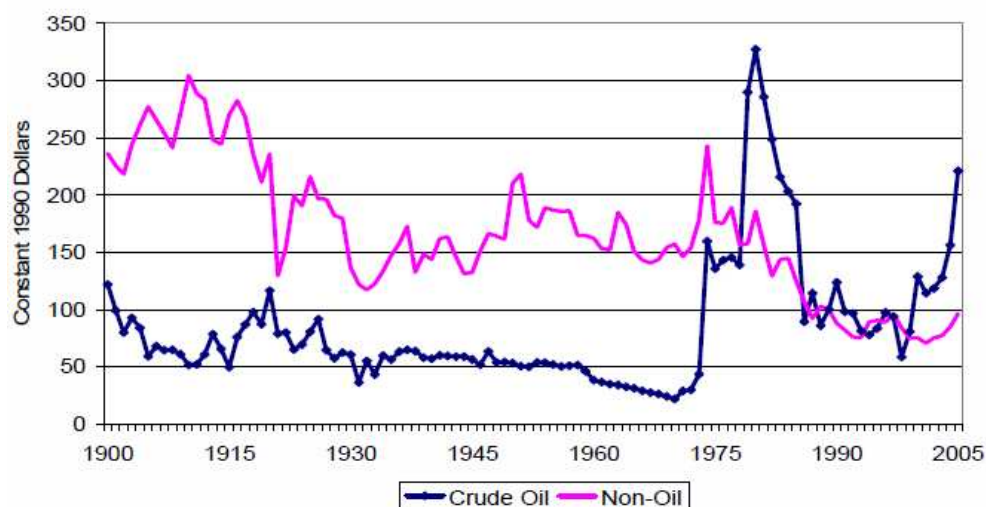
The trend has been questioned and remains a matter of debate (Grilli and Yang, 1988, arguing that the pattern of commodity prices may be explained by periodic structural breaks). The IMF (2009a) nevertheless underscores that over the long-run, prices for many commodities have declined relative to those of manufactures and services: the secular decline stems from productivity gains in the commodity-extracting sectors and the fact that many commodities' share in total consumption declines as income increases – even if rates of decline vary across commodities (depending on available reserves in the case of non-renewable resources, industry structure, demand characteristics, and so on). Oil is an exception in this decline, which for the IMF is explained, among others, by its oligopolistic supply structure and the concentration of reserves.

Volatility as a key characteristic of commodity prices, its amplification over 2003-09 and culmination in 2008-09

Beyond the long-term decline in the terms of trade of commodity-exporting countries, a key characteristic of commodities is price volatility. The latter has been demonstrated

on an historical scale. Over the past three centuries, commodities have always shown greater price volatility than manufactures (Jacks *et al.*, 2009). Likewise, Cashin and McDermott (2002), analysing *the Economist's* composite commodity price index over 1862-1999, underscore an increasing amplitude of price movements in the early 1900s and an increasing frequency of large price movements after the collapse of the Bretton Woods regime of fixed exchange rates in the early 1970s, and show that the downward trend in real commodity prices is “completely dominated by the variability of prices”.

Figure 2: The volatility of real oil and non-oil commodity prices



Source: Streifel (2006).

This volatility has been spectacularly confirmed during the last commodity boom (2002-08), which was driven by supply and demand factors (in particular from emerging countries, especially China) and price transmission eased by the linkages across commodity markets (Helbling *et al.*, 2008). It was particularly acute during the 2008-09 crisis and the collapse of commodity prices in the second half of 2008, which ended the boom. Following past cyclical patterns, commodities linked to industrial activity (e.g., fuels and base metals) have been most affected. As underscored by Helbling *et al.* (2009), commodity price fluctuations have been dominated by the prices of a few commodities: the 2002-08 price boom was an energy and metals price boom, prices having tripled between mid-2002 and mid-2008. Metals prices follow demand fluctuations according to the global industrial cycle, but major price gains were also recorded for other commodities – indeed, demand and supply characteristics of commodities differ despite the integration of commodity markets. The second half of 2008 witnessed a sharp drop in prices of most commodities: energy prices declined by about 70%, metals prices by more than 50%, food prices - although their fluctuation is less linked to global cyclical conditions - declined by about 30%. The crisis fed

volatility as the low prices of 2009 created opportunities for buyers in that year, resulting in steep increases for some commodities³.

Food prices were less affected, given the lower income elasticity of underlying demand (IMF, 2009a, chap.1). The rise and fall of food prices during 2005–08, however, was associated with a sharp increase in price volatility (as the annualised standard deviation of monthly price changes): from about 8% for the decade through 2007 to more than 22 percent since 2008 (IMF, 2009c, box 1.7).

According to the IMF (2009a, April, chap. 1), the magnitude of price changes and volatility rose to unprecedented levels for many major commodities. For example, for crude oil (WTI), the largest 6-month decline in 2008 was -76.8%, to be compared with a largest 6-month decline of -60.1% for the whole period of 1970-2007, and the standard deviation (of weekly changes in commodity prices over a 12-month period) was 18.4, to be compared with an highest level of 16.1 over 1970-2007. The largest 6-month decline were similarly larger in 2008 than any 6-month decline over 1970-2007 for many commodities – aluminium, copper, nickel, corn, wheat - but not all, e.g., gold (IMF, 2009a, table 1.2).

Similarly, the IMF commodity price index had declined by almost 55% between the July 2008 peak and December 2008. With commodity prices indices =100 in January 2003, energy prices jumped to below 450 in mid-2008, then falling to a bit above 150 at the end of 2008. Metals prices exhibited similar volatility (350 in mid-2008, and below 200 at the end of 2008) (IMF, 2009a).

The detrimental consequences of volatility

Price volatility and fluctuations of global demand prevent diversification, risk-pooling and long term growth strategies for commodity-exporting countries and have a detrimental impact on the macroeconomic management of countries (Sindzingre, 2010): indeed, it is difficult to maintain any fiscal balance and a credible state capacity with highly volatile and unpredictable revenues in countries where revenue from commodities may represent 80% or more of total revenue, as, for example, in the Republic of Congo, Chad, Nigeria and Angola (IMF, 2009b, for the year 2008).

The detrimental effects of commodity price volatility are confirmed in an historical perspective, for example by Blattman *et al.* (2004) who show that commodities have been more volatile than other products, and countries with more volatile prices have grown slowly relative both to the industrialised countries and to other primary product exporters. Using a panel of 35 countries (not including SSA countries, however) over the period 1870-1939, they show that the exogenous price volatility of each primary product generated internal instability, reduced investment and diminished growth. Volatility was much more important for growth than was secular change - a channel of this negative impact being that volatility seemed to have an adverse impact on foreign

³ Nick Trevethan and David Brough, *Commodities on course for strongest year since 1973*, Reuters (UK), 31 December 2009: <http://uk.reuters.com/article/idUKTRE5BU1BT20091231>.

capital inflows. They also find an asymmetry between industrialised and developing countries, as changes in volatility had a significant negative influence on income growth in developing countries, but not in industrial countries – this asymmetry of the impact of terms of trade shocks was also found by Hadass and Williamson (2003) for the 1870-WWI period. The negative impact of terms of trade volatility and shocks on growth is confirmed by many studies (e.g., Hausmann and Rigobon, 2002; Kose and Reizman, 1998, for SSA).

Volatility magnified by the integration of commodity and financial markets

In the 2000s, commodity-dependent low-income countries became increasingly vulnerable to price fluctuations due to the growing linkages between markets, which foster the transmission of world prices shocks and volatility across commodities and to producing countries (Baffes and Gardner, 2003; Timmer, 2009). Indeed, commodity price volatility is compounded not only by the integration of commodity markets among themselves, but of commodity and financial markets. This ‘financialisation’ of commodity markets, as well as their intrinsic instability, has been first demonstrated by Alfred Maizels (1994; 1984; 1987). It resulted in an increase in price volatility, due to the overreaction of commodity prices to interest rates changes and the impacts of derivative markets on commodity prices, which became factors of herd behaviour, contagion and transmission of risk (Nissanke, 2009).

The 2000s witnessed the multiplication of linkages across markets, and a growing financialisation of commodity markets, with commodities traded by investors as financial assets among others (e.g., equities, bonds, etc). Between 2002 and mid-2008, the number of futures and options contracts outstanding on commodity exchanges worldwide rose more than threefold, and the notional value of commodity-related contracts traded over the counter increased more than 14-fold (Mayer, 2009; UNCTAD, 2009, chap. 2). These financial investments in commodities fell sharply at the onset of the crisis in mid-2008, while increasing again in 2009. In particular, since the 2000s, oil prices have been modified by the transformation of oil contracts into financial assets: Cifarelli and Paladino (2009) thus show the departure of prices from their fundamental values due to new trading techniques and the increase in their variability over 2000-08.

Commodity-induced ‘international poverty traps’

Countries that share this commodity-dependence are therefore likely to be caught in poverty traps. UNCTAD thus consistently emphasises the existence of poverty traps created by commodity-based market structures and their associated features – e.g., low productivity, debt traps - and the relevance of the concept in the understanding of the growth profile of some developing countries.

It has built the expression of ‘international poverty traps’ in order to explain the economic stagnation of countries depending on primary commodity exports, where a combination of international trade and finance relationships reinforces stagnation which,

in turn, reinforces the negative impact of external relationships, globalisation having tightened international poverty traps (UNCTAD, 2002). These traps have been compounded by the integration of the global economy (though this remains debated, e.g., by Jacks *et al.*, 2009) and the closer linkages between energy and agricultural commodity markets, as well as commodity and financial markets over the 2000s, and the subsequent increase in price volatility and therefore uncertainty, which has a detrimental effect on investment and governments' financial management (UNCTAD, 2008b).

3. What is a poverty trap? The concept's main features

Low equilibria, lock-in processes, cumulative causation

For these arguments to be convincing, however, the concept of the poverty trap must be defined. This concept is an outcome of the crossing of different theoretical currents and is related to several other concepts: among others, irreversibility, feedback processes, lock-in devices, multiple equilibria, threshold effects, non-linearity and non-convexity, and increasing returns (Sindzingre, 2007a). Arthur (1989, 1994a), in particular, explored the concepts of self-reinforcing mechanisms, cumulative causation, the "lock-in by historical small events" and multiple equilibria, with some equilibria able to lock in economies or individuals in inefficient behaviour and low levels of income. The importance of increasing returns in growth has long been emphasised (e.g., Allyn Young, Nicholas Kaldor). However, as underscored by Arrow (in Arthur, 1994a), Arthur highlighted the dynamic nature of positive feedback processes and their stochastic character, i.e. the existence of random deviations from long-run tendencies: this property means the possibility of multiple long-run states depending on initial conditions and random fluctuations, and of 'specialised' outcomes, e.g. in geographical terms – economic geography has indeed analysed in depth such cumulative causation processes (Venables, 2008). Even with suitable initial conditions, the same mechanisms can lead to either optimal or inefficient equilibria.

The notions of lock-in (e.g. by technological choices) and positive feedback were used by Paul David for the elaboration of the concept of path dependence (David, 1985). In line with Arthur, David (2000) defines path dependence as phenomena which have the dynamic property of non-ergodicity in stochastic processes (i.e. not having the "ability eventually to shake free from the influence of their past states"), and imply the existence of "winners and losers".

Again referring to Arthur (1989), David (2000, p. 10) defines the 'lock-in' as the "entry of a system into a trapping region" - the basin of attraction that surrounds a locally (or globally) stable and self-sustaining equilibrium. A dynamic system that enters into such regions needs, in order to escape from it, external forces that alter its structure - this notion has been used in early development economics for justifying state intervention. Locked-in equilibria may be optimal or detrimental: for David, the key point is that whatever the equilibrium, individuals are happy doing something, "even though they

would be happier doing something else if everybody would also do that other thing too”, because incomplete information prevents them from coordinating and moving elsewhere collectively. Alternative paths are possible, however, and David emphasises that path dependence does not mean determinism.

Spillovers and coordination failures as causes of underdevelopment traps

In order to understand why some economies seemed unable to trigger the virtuous process of catching-up, the first development theorists at the time of WWII built a series of concepts that provided a basis for further analyses of traps, those of spillover effects, linkages and complementarities, which display much overlap with those of cumulative causation and path dependency (Toner, 1999).

Rosenstein-Rodan (1943) has defined spillovers as increasing returns to an activity proportional to the number of others who undertake the same activity. Coordination failures explain the possibility of multiple equilibria and the formation of underdevelopment traps, low equilibria and coordination failures being endogenous and self-reinforcing. They imply that markets alone cannot achieve the coordination that is necessary for triggering the process of development (Adelman, 2000; 2001): markets do not necessarily lead from the lowest equilibrium to the best one (Hoff, 2000). This was the justification of the role of the state at the early stages of development, as the entity most able to reallocate factors and resources across markets, as well as important policy changes or financing – ‘big push’ policies (Murphy *et al.*, 1989). As state capacity is endogenous to the level of economic development, underdevelopment traps are likely at early stages of development (Bardhan and Udry, 1999).

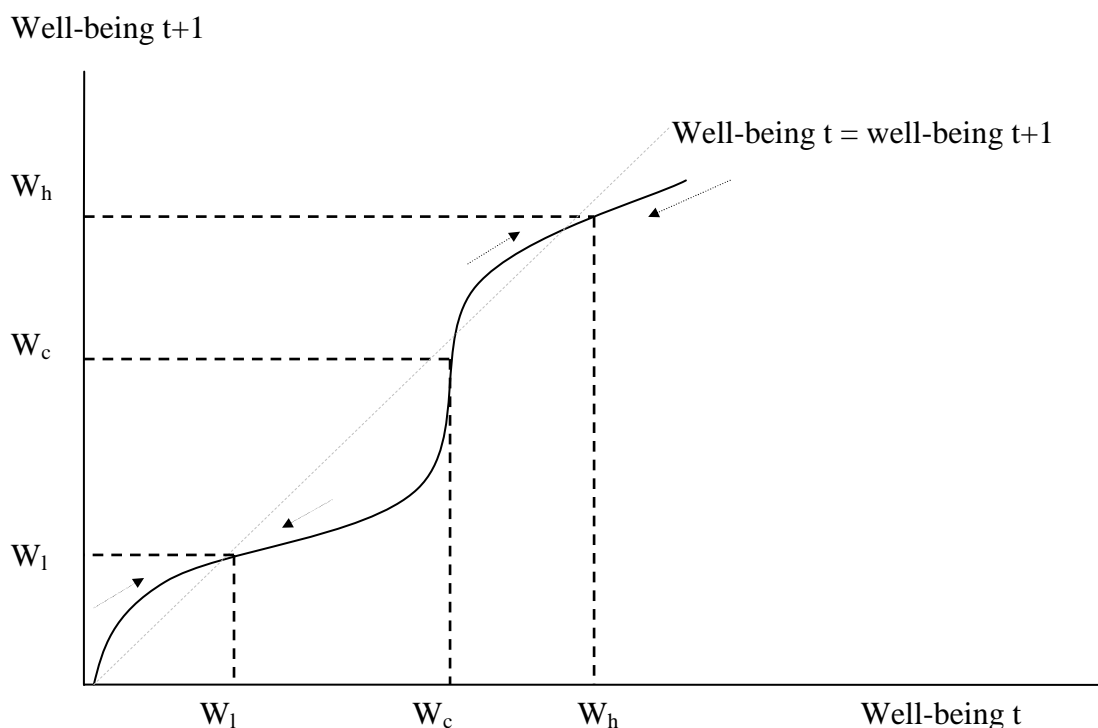
The recognition of traps by growth theories

The concept of poverty trap was further supported by growth theories, in particular through those of ‘club convergence’ in the 1990s (Azariadis, 2006). The latter called into question the neoclassical hypotheses of growth convergence across countries or regions to similar steady-state income levels, in view of the fact that since the 1960s, only East Asian countries caught up with industrialised countries. A group of countries – the less developed countries - are not catching up and the world distribution of per capita incomes follows a ‘twin peak’ or polarised shape (Quah, 1996; Beaudry *et al.*, 2002; Pritchett, 1997; 2000). As underscored by Azariadis and Stachurski (2005), the presence of increasing returns or positive feedbacks may reinforce either poverty or development, a poverty trap being defined as “any self-reinforcing mechanism which causes poverty to persist”. The income gap between rich and poor countries is explained by multiple equilibria, the latter being locked in a low equilibrium (Graham and Temple, 2006), and the concept of ‘club convergence’ confirms the role of history (past events may have large and lasting effects).

Multiple equilibria are illustrated by the S-shape of the growth function, in contrast with growth models assuming a single dynamic equilibrium and convergence of growth

paths (Barrett and Swallow, 2006): stable dynamic equilibria at high and low levels of welfare (W_h and W_l) coexist with at least one unstable dynamic equilibrium, a critical threshold (W_c): at this threshold, countries (or households) may fall into the basin of attraction of the low equilibrium W_l – the poverty trap. Once there, it is difficult to get out of it and move toward a higher equilibrium (figure 3).

Figure 3: Welfare dynamics under the poverty traps hypothesis



Source: adapted from Barrett and Swallow (2006).

4. Is commodity-dependence an effective cause of traps? The criticisms of commodity-based poverty traps

The notion of poverty traps created by commodity-based export structures has been subject to several criticisms, which have used a variety of arguments: in particular, i) if traps exist, they may be generated by many factors other than commodity-based market structures; ii) commodities do not always generate traps; and iii) the very existence of poverty traps may be questioned.

Lack of correlation between commodity-based export structures and traps: traps caused by many factors unrelated to commodities

Firstly, an argument against poverty traps that would be generated by commodity dependence is that the lack of convergence, with groups of countries growing more slowly relatively to other countries, may be caused by many other factors. Poverty traps may result from initial economic conditions, e.g., low savings rates as the latter depend on the level of per-capita income. Traps may also result from different types of market failures - credit market imperfection and borrowing constraints, and the lack of access of the poor to the credit and insurance markets being an important factor of divergence with the rich (Banerjee and Newman, 1994). High initial poverty rates thus entail lower growth rates (Ravallion 2009; Lopez and Servén, 2009). Poverty may become its own cause in the context of a lack of complementarities in expanding product variety and the lack of demand and the lack of support industries for more technologically advanced products that reinforce themselves (Matsuyama, 1995).

Similarly, ‘low growth traps’ or ‘underdevelopment traps’, i.e. multiple and stable equilibria for economies exhibiting similar initial conditions, may result from the existence of ‘threshold externalities’ created by increasing returns in the accumulation of human capital (Azariadis and Drazen, 1990). Similar countries do not converge to the same steady state and may fall in poverty traps when they are characterised by subsistence consumption, limited human capital, endogenous fertility and political economy problems such as coordination failures among voters (Azariadis, 1996). Growth may be non-ergodic and poverty traps may be generated by ‘misbehaving governments’ and incomplete markets (Azariadis, 2006).

Likewise, spatial processes or ‘neighbourhood effects’ may explain the persistence of poverty in particular areas over generations (Durlauf, 2003). Spatial poverty traps are strengthened by self-reinforcing processes such as a low level of education, poor schooling infrastructure, low levels of taxes, limited supply of public goods and access to institutions (e.g., the rule of law), and have a dynamic dimension, as the place of residence restricts future opportunities (Benabou, 2000). Neighbourhood effects are induced by the interdependence of behaviour (the decision to acquire an education depends on the prior existence of other educated members), which is intertemporal and generates different types of groups that have different steady states (with/without educated members) (Durlauf, 1996; 2003). These reciprocal feedbacks between economic stratification and neighbourhood effects transmit different types of economic status across generations. In spatial or geographic poverty traps, people with certain characteristics may agglomerate in ‘poor areas’, or the characteristics of some areas modify incomes for otherwise identical households (Jalan and Ravallion, 1997; Hoff, 2000; Bloom *et al.*, 2003).

Lack of correlation: the export of commodities as a basis for sustained growth

Secondly, an argument against commodity-generated traps is that many commodity-exporting countries have enjoyed a continuous increase in their per capita income. Indeed, there are several commodity-exporting countries that have not been caught in a

poverty trap, and have historically grounded their growth on the harnessing and export of primary products, including major industrialised countries, e.g., Australia, New Zealand, Canada, Scandinavian countries, among many others. Growth in developed countries has been based on commodities that have been efficiently used as inputs in the industrialisation process, and, though the argument remains disputed, has been supported in some cases by colonisation of countries following the ‘small open economy’ model, i.e. the imports of commodities from colonised countries and exports of manufactured products to them (Hopkins, 1973).

Many developed countries have based their industrialisation on the exploitation of natural resources. In particular, this has been the case of the United States: as argued by Wright (1990), the rise of US manufacturing during the 1890s was associated with a rise in the resource intensity of exports (e.g., natural gas, petroleum, copper) and that natural resource abundance lowered input prices and hence fostered industrial production, e.g. steel products, and therefore the increase in manufactured exports.

The irrelevance of the very concept of trap

Thirdly, an argument against poverty traps created by commodity dependence is that that problems of commodity-exporting countries are already well-explained by more powerful theories, for example Dutch disease (Corden, 1982; Corden and Neary, 1984), or more recently, theories of the ‘resource curse’ that underscored a negative relationship between resource abundance and growth (Sachs and Warner, 1995).

Moreover, criticisms go beyond commodity-exporting countries and refute the relevance of the concept of trap for analysing growth trajectories in poor countries, in particular because prices in commodity markets follow both trends and cycles (Cashin and Mc Dermott, 2002), or ‘supercycles’, or endogenous fluctuations and ‘cobweb’-shaped adjustments (Boussard, 2007 for agricultural markets): theories of business cycles may include temporary fluctuations resulting from deviations from a trend, or permanent fluctuations resulting from shocks with broken trends, but they do not need the concept of trap (Romero-Avila, 2009). Commodity prices follow long-term trends that are dissociated from medium term price fluctuations, as rates of change are highly variable and the trend component shifts over time, reflecting changes in longer-run price determinants, such as average costs of marginal fields or mines. Price fluctuations reflect either those in the trend component or those in the cyclical component (Chang and Helbling, in IMF, 2009a, box 1.5). For example, over the long-run, SSA growth has moved closely with global real GDP growth, and with the 2008-09 crisis and the slowing of global growth, SSA exports are affected by lower external demand and declines in commodity prices (IMF, 2009b).

Similarly, the concepts of growth ‘acceleration’ and ‘deceleration’, ‘collapse’ or recession (where growth decelerates to negative rates) may be found more relevant than that of poverty traps - though, interestingly, Hausmann *et al.* (2006) acknowledge a compatibility of these concept with trap models. Growth decelerations that last are explained in this instance as the result of business-cycle dynamics (Hausmann *et al.*, 2005; 2006). Econometric tests of traps may also be inconclusive, as shown by

Rodriguez (2008) using a UNIDO sample of 44 developed and developing countries via the estimation of economies of scale in manufacturing, the hypothesis being that if positive spillovers and increasing returns are the basis for multiple equilibria, then the former should be particularly prevalent when countries are transitioning either into or out of poverty traps, i.e. during periods of growth collapses and growth accelerations.

Likewise, it may be argued that volatility does not create traps: on the example of 44 SSA countries between 1975 and 2005, Saba Arbache and Page (2007a, b) show that they are characterised by low and volatile growth since 1975, but find no evidence that growth volatility is associated with the level of GDP per capita over the long run (interestingly, however, they observe that growth accelerations and decelerations have an asymmetric impact on human development outcomes, which could confirm the notion of trap).

Similarly, as argued by Easterly *et al.* (1993), fluctuations of growth rates do not necessarily build a poverty trap, even if terms of trade shocks explain a large part of the variance in growth, and these fluctuations do not predict what long-run performance and per capita income will be: it is global technological change that determines long-run growth, while country characteristics determine relative income levels. Easterly (2005; 2009) hence denies the pertinence of the concept of poverty trap (and consequently the relevance of 'big push' policies, such as massive aid inflows): in SSA countries, for example, over the last 50 years, levels of income per capita have increased slowly despite high fluctuations of growth rates. There is little evidence proving the existence of poverty traps, and in the sense of zero growth for low income countries, they are rejected by the data in most time periods (Easterly, 2005). Kraay and Raddatz (2005) also find no evidence of traditional determinants of poverty traps in low-income countries, i.e. low saving rates, low technology, low productivity, and therefore no support for the thesis of unfavourable initial conditions - poverty depends on policies.

5. Recognising traps' definitional features in the impact of the crisis and growth trajectories of commodity-dependent countries

Despite these views, it is argued here that the impact of the 2008-09 crisis, and more generally, growth trajectories of SSA low-income commodity-dependent countries exhibit the definitional features of key poverty traps', and that the concept remains fully accurate to explain the processes underlying the evolution of commodity-dependent developing countries.

Indeed, the critiques overlook key properties of poverty traps, i.e. to subsume processes that lock-in in low equilibria, generate divergence, increasing returns and cumulative causation, and create threshold effects. As underscored by Arthur and David, economies may fall and remain locked in a basin of attraction of a low equilibrium, with the lock-in self-reinforcing itself. This makes structural breaks and the reaching of a higher-growth path more difficult (as well as 'self-discovery' processes, Hausmann and Rodrik, 2003). Similarly, the concept of trap refers to processes that are dynamic and relative to other

countries' dynamics: in the long-run, countries appear to be caught in equilibria (in terms of growth, efficiency) that are lower than for other countries. Another central feature is that 'small events' may induce large effects that may be irreversible, i.e. path dependence, and the possibility of bifurcations and thresholds. The concept of trap points to precise mechanisms that differ from those of growth rate fluctuations.

Has the 2008-09 crisis induced such processes in commodity-dependent low-income SSA countries? And over the longer-run, do their growth trajectories exhibit these definitional features?

Low equilibria trapping commodity-dependent countries

A first feature is the fact of being caught in a low equilibrium. There is evidence of a relationship of commodity dependence with low per capita income: among a sample of 45 least developed countries, 30 exhibit a dependency rate above 50%; moreover, in Africa, 34 of the 52 countries are more than 50% dependent (UNCTAD, 2008a).

Volatility of international commodity prices - together with fluctuations of supply and demand -, which have been amplified by global markets integration over the 2000s and peaked in 2008, appear to be the key channel by which commodity-dependent countries are ensnared in a low equilibrium or low growth trap. Their dependence on commodities with volatile prices entails the volatility and unpredictability of these countries' earnings. The channels of a negative impact of volatility on growth are that volatility makes anticipations and fiscal and debt management difficult and that it increases the likelihood of irreversibilities. Indeed, a low level of development is associated with high levels of output volatility (Krishna and Levchenko, 2009), and macroeconomic volatility (defined as the standard deviation of per capita GDP growth) has a negative impact on growth (Ramey and Ramey, 1995; Loayza *et al.*, 2007). Specifically, volatility created by commodity-dependence appears to have an adverse impact on growth (Van der Ploeg and Poelhekke, 2009).

It could be argued that the commodity boom of 2003-08 underlay impressive growth rates of these countries, and in particular in SSA – a real GDP growth rate of 5% between 1995 and 2007 pushed by resource-rich countries (IMF, 2008, fig. 2.8), and the IMF forecasts a recovery for SSA as soon as in 2010 – a real GDP growth rate of 4% (IMF, 2009c, table 2.8). However, since the boom's inception, the IMF constantly emphasised the fragility of this type of growth (IMF, 2006, chap. 5), and especially the fiscal vulnerability of oil-producing SSA countries (York and Zhan, 2009).

The argument that many developed countries started their growth with the harnessing of primary products may not hold for most low-income countries. In contrast with these countries, in low-income countries commodities have not been or could not be utilised as inputs in industrial processes. In SSA, for example, there are many obstacles to agricultural commodities (e.g., cocoa, coffee) constituting inputs in industrialisation, and it is even the same for oil (as shown, for example, by Nigeria). Moreover, natural-resource-intensive sectors (e.g., agriculture) absorb capital that might otherwise flow to

manufacturing, which reduces skill accumulation and therefore impedes industrialisation (Leamer *et al.*, 1999).

A great number of commodity-exporting countries exhibit the following features - stabilisation in a low equilibrium basin of attraction, dependence on past initial conditions and path, remarkable stability of their export structure over decades: for example, at the beginning of the 20th century, Senegal produced 141000 tons of groundnuts, which represented 68% of its exports in 1929, and 80% in 1960, and this commodity was still Senegal's principal export at the end of the 20th century (Freud, 1988); likewise., in 1990, oil represented 97% of Nigerian exports, in 2002, 100%, and 98% in 2005 (World Bank *World Development Indicators* 2004, 2006, 2007). Equally, these countries are characterised by the persistence of a low industrial base: in 1990, SSA thus represented 0.79% of world industrial output, and in 2002, 0.74 %; without South Africa, in 1990, 0.24%, and in 2002, 0.25% (UNIDO, 2005). In Matsuyama's (2008) words, initial conditions may perpetuate themselves, and an economy that starts in certain conditions, below a certain threshold, "will be trapped forever" below that threshold.

The argument that it is difficult to demonstrate the existence of long-lasting low equilibria as, if they exist, some countries (e.g., in East Asia) have been able to get out of them, is questionable. Commodity-dependent low-income countries, especially in SSA, do not have the features of the few developing countries that were able to trigger a growth path in the 1960s, such as the Asian 'developmental states' and now China, i.e. a growth based on the state-led creation of industrial sectors, some degree of protection, limited endowment in natural resources, a focus on education, a not too unequal income distribution, among others (Sindzingre, 2007c).

Cumulative causation and increasing gaps between groups of countries according to their export structure

A second feature of the concept of poverty trap is its reference to processes that are cumulative and relative to other economies. Even if commodity-based poor countries do grow, this does not refute the fact that they may be caught in traps, since these market structures may create traps relatively to other countries' growth trajectories. The industrialisation process requires structural transformation, i.e. changing the exported products: as emphasised by Hausmann and Rodrik (2006), however, this is difficult, because structural transformation is confronted with large market failures: for any given level of development, countries that have a more advanced export package are likely to grow more rapidly in the future, while the other countries are constrained by the low productivity associated with their export package – a complementarities-based cumulative causation underlying industrialisation that is constantly underscored since Rosenstein-Rodan.

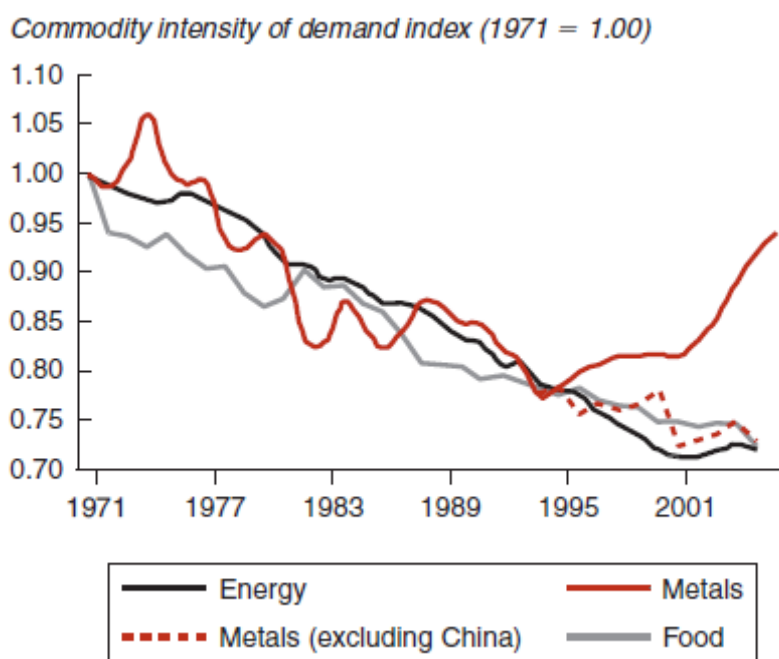
Commodity-producing countries, which most often rely on one or two exported primary products, grow because their products are the subject of international demand (e.g., oil, copper, gold, etc.). Beyond the detrimental fact that this demand is external (over which domestic policies have little control), fluctuating and unpredictable, the dynamics of an

increasing gap between commodity-exporting countries and other groups of countries is observable in the secular decline in the price of commodities.

This divergence is confirmed by historical data. Through the comparison of West Africa and South East Asia, Booth (2008) thus highlights a widening gap between the two regions throughout the 20th century regarding agricultural development, export growth and the impact of a shock such as the 1930s slump; South East Asian countries benefiting from increases in productivity and public policies, in contrast with West African countries. This divergence is also confirmed by the asymmetry of the impact of terms of trade shocks highlighted by Blattman *et al.* (2004) and Hadass and Williamson (2003), who support Singer's hypothesis, i.e. the long-run impact of relative price shocks reinforced industrial comparative advantage in the 'centre' and favoured the sector that carried growth, while it reinforced primary product comparative advantage in the 'periphery', harming the sector that fostered growth.

Global demand is boosted by technology intensity, and moreover, due to technological progress, the quantity of commodities used in a unit of GDP has steadily decreased since 1971 (World Bank, 2009a, figure 2.12).

Figure 4: Quantity of commodities used per unit of GDP, 1971–2001



Source: World Bank (2009a).

The continuous decrease of the share of SSA in world trade is another signal of divergence and these cumulative mechanisms. Sub-Saharan Africa's share of world exports fell from above 7% in 1948 (Subramanian and Matthijs, 2007) to above 1% in 2007 (1.84% with South Africa; 1.34% without) (UNCTAD, 2008c, table 1.1.2).

Poor commodity-dependent countries are caught in endogenous processes where low productivity, low value-added and the export of commodities reinforce each other. These factors cumulate and push economies towards lower equilibria. Even if SSA countries appear to grow slowly, as argued by Easterly, they form a group that share a common market structure - commodity-based exports, narrow industrial base, low diversification – and the elevation of their income per capita is slower than other groups of countries. As underscored by Azariadis (2006) in his comment of table 2, less developed countries grow a bit slower than the world average, and outside East and Southeast Asian countries, less developed countries are not catching up with OECD countries.

Table 2: Annual growth rates in per capita GDP, 1870-1994

Subsample	1870-1960	1960-1979	1980-1994
17 industrial countries	1.50 (0.33)	3.20 (1.10)	1.50 (0.51)
28 LDCs	1.20 (0.88)	2.50 (1.70)	0.34 (3.00)

Source: Pritchett (1997) (std. deviations in parentheses), quoted by Azariadis (2006).

Threshold effects, bifurcations and lasting impacts of external shocks

Commodity-dependent SSA countries are affected by a third definitional feature of poverty traps: shocks, even small, may generate large effects and make countries fall into lower equilibria. These countries are not just exposed to small shocks, but also to important and recurrent shocks, world business cycles and commodity prices fluctuations, which affected international trade after the 1970s and especially in the 2000s. Macroeconomic volatility may constitute a criterion differentiating groups with different growth regimes, where instability impedes growth in less stable countries (Sirimaneetham and Temple, 2009). Moreover, macroeconomic volatility increases the likelihood of being caught in a lower equilibrium, because it entails asymmetrical processes: past experience shows that periods of bust last longer than booms, and that commodity prices exhibit long slumps after short booms (Cashin *et al.*, 2002).

Undiversified export structure, dependence on volatile and declining earnings, generate vulnerability to external shocks and are the exact ingredients of a lack of resilience to these shocks: for economies that are at ‘tipping points’ in various areas, e.g., fiscal balance, institutional capacity, poverty incidence, etc. – these ingredients may precipitate a fall into a lower equilibrium. This is not only the case of commodity prices slumps, but also of booms: booms, such as that of 2003-08, may constitute shocks that have an adverse impact, as high prices are incentives for increasing a given commodity export, and hence dependency on it.

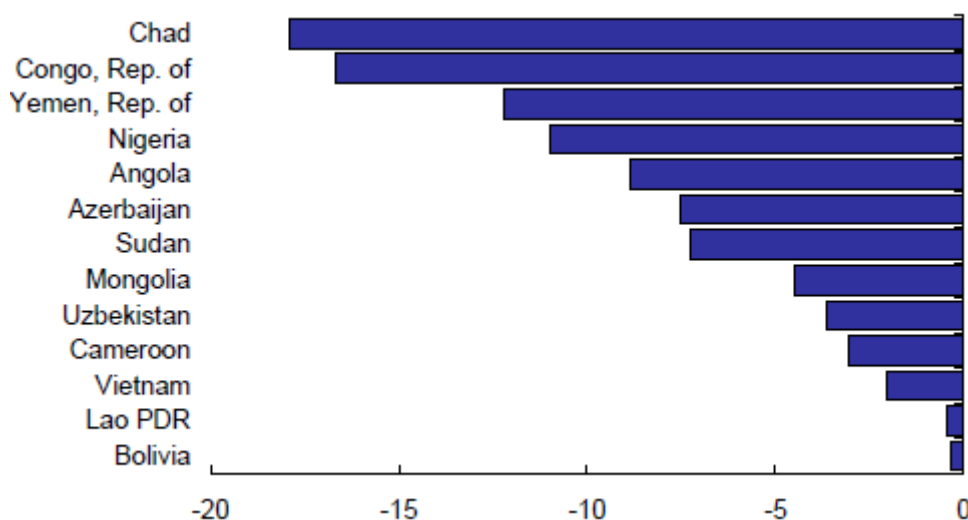
Commodity-dependent countries are indeed more likely to be exposed to external shocks. Funke *et al.* (2008), analysing the persistence of terms of trade shocks for a panel of 159 countries over 1970-2006, find that SSA and the Middle- East have been more affected than Western Hemisphere and Asia-Pacific countries, because of these

two regions' lesser degree of diversification, dependence on a few natural resources and a lower manufacturing base. During this period, SSA countries exhibited on average more than two persistent terms of trade shocks.

The shocks of the 2000s are a case in point. The commodity price shock of 2003-2009 is the largest and longest boom since 1900, after three major commodity booms and slumps in the 20th century (1915–17; 1950–57; 1973–74 (World Bank, 2009a, table 2.1). The 2008-09 global recession, although ongoing and therefore with still unpredictable effects, is a major shock that is likely to generate threshold effects. Oil-exporting countries experienced the sharpest price fluctuation within a year and price volatility peaked to unprecedented levels for most commodities (IMF, 2009a, chap.1).

With the 2008-09 global recession, developing countries that had an outward-oriented market structure face a fall in demand from rich countries for their products. The effects of the crisis on trade and trade taxes particularly hit commodity-exporters: with tax systems heavily relying on commodity taxation, they face losses in revenues that are expected to be more than twice the average of all low-income countries – for example, the commodities revenues/GDP ratio has fallen by more than 15 percentage points of GDP in Chad and the Rep. of Congo, more than 10 points in Nigeria (IMF, 2009d).

Figure 5: Change in commodity revenues-to-GDP ratio from 2008 to 2009 (percentage points of GDP)



Source: IMF (2009d).

This puts an end to investment projects and increases unemployment – an immediate effect of a world recession (IMF, 2009a) -, investment and employment being the aggregates that have the largest impact on future incomes. More than 77% of SSA workers could be in vulnerable employment in 2009 (ILO, 2009). For SSA, it is the drop in external demand, falling export prices, and lower capital inflows, in particular FDI, that underlie a growth rate forecast of 1% for 2009, down from 5.7% on average over 2006-08 (World Bank, 2009b).

Commodity-dependence and a narrow industrial base also makes these countries highly dependent on imports of the commodities they do not export, and therefore exposed to price shocks affecting these imports. A manifest example is the food prices volatility that accompanied the 2005-08 rise and fall of food prices, and the high food prices that in 2008 hit food-importing countries where the income of a significant part of the population is at subsistence level, which may have pushed entire groups into deeper poverty. The fall in internationally traded food prices in 2009 should alleviate the increases in poverty that occurred during the first half of 2008: however, this does not offset the increase in extreme poverty that ensued from the increase in local food prices between January 2005 and mid-2008, and domestic food prices may decrease, but with a lag (World Bank, 2009b).

The 2008 negative price shock was preceded by the 1979 global drop in many agricultural commodity prices (e.g., coffee, cocoa) followed by the 1986 drop in oil prices, which, although obviously different, suggests possible impacts of the 2008 shock: despite their growth rates in the two previous decades (and in some cases, high levels of investment and premises of industrial diversification, as in Ivory Coast), these shocks toppled most SSA commodity-exporting countries into lower equilibria that still endure three decades later, and have transformed them into ‘prolonged users’ of IMF financing (IMF-IEO, 2002). Three decades later, the cost for these countries of getting out of these ‘bad’ equilibria – in terms of policies or financing- appears to be very high – and much beyond the capacities of any ‘big push’, in particular official aid in its current forms.

The transmission of shocks and trapping processes

At the micro-level, macroeconomic volatility – e.g., shocks on commodity prices that are transmitted to producers or consumers, or create fiscal imbalances that reduce publicly provided social security – may trigger irreversible processes for the individuals that are close to subsistence income. Households respond differently to income shocks depending on the level of their assets (Zimmerman and Carter, 2003). Individuals close to subsistence levels sell assets, e.g. land, that are necessary to their future income and productivity, which pushes them into a lower equilibrium and poverty trap, e.g., reducing spending on children’s education or nutritional intake (Jha *et al.*, 2009). Past experiences of shocks on producers’ earnings provide evidence of such adaptive behaviour that is not reversible after the shock, as, for example, in Indonesia during the 1997-98 Asian crisis, where household spending on education declined, even more among the poorest households (Thomas *et al.*, 2004) - surveys made in 2002 were still able to observe large effects of the crisis on the poverty rate (Ravallion and Lokshin, 2007)

Moreover, improvements in technology that could enhance productivity require capital and access to credit, which creates thresholds and traps: the richer households have access to credit, investment, higher productivity and higher returns, while the poor are caught in a poverty trap that is often compounded by indebtedness due to limited access to formal credit markets and recourse to moneylenders’ distorted high interest rates.

Poverty is a constraint to productivity and hence to escaping poverty (Duclos and O'Connell, 2009, confirming Ravallion, 2009), and rates of return are positively correlated with initial wealth. This creates threshold-based multiple equilibria, which allow for the persistence of a structural poverty that is distinct from transitory poverty, and shows the possibility of bifurcated accumulation strategies and dynamic asset poverty thresholds (Carter and Barrett, 2005; 2006).

The 2008-09 recession may induce similar effects, and cause welfare losses that may last much longer than the crisis itself, because the poorest are particularly vulnerable to even small shocks: as productive activity is impossible below a certain nutritional threshold, a negative shock can push a poor household past its tipping point and towards extreme poverty (Ravallion, 2008). Even if the number of people in extreme poverty decreases with the diminution of food prices in 2009, these are the ingredients of irreversible negative effects on the human capital of future generations and hence intergenerational poverty traps (Dasgupta, 1997).

Could trade policies foster structural transformation? Their limited room for manoeuvre

It may be argued that the governments of commodity-dependent low-income countries can modify the dynamics that foster the formation of traps via the use of public policies. In particular, trade policies such as openness and regional integration, and monetary arrangements with developed countries such as the Franc zone (with the eurozone), could modify this export structure and its associated vulnerability to external shocks.

This is, however, not likely, firstly due to the characteristics of these countries, especially those of their financial sectors - lack of financial deepening -, as well as their trade structure. Commodity-dependent countries' vulnerability (and stability) indeed stems from factors where domestic public policies have limited influence: the volatility of prices formed in international commodity markets that are integrated with other markets (especially financial), and variations in growth rates and demand in importing countries (EU, USA, and the larger emerging countries). In addition, in commodity-exporting countries, trade policies may either aim at protecting domestic producers from international price volatility or be oriented towards openness. In such countries, fiscal earnings depend on commodity exports, and trade policies are therefore always simultaneously fiscal policies for governments whose budgets are volatile and under tight constraints: this double-edged dimension of policies may reduce their efficiency, while trade and fiscal policies applied to 'soft' commodities (e.g. agricultural) and 'hard' ones (such as minerals; Kaplinsky, 2006) may differ, e.g. the type of instrument – levy on agricultural producers, marketing boards (e.g. for cocoa, coffee, etc.), or royalties extracted from firms for oil or minerals (Aarsnes, 2009).

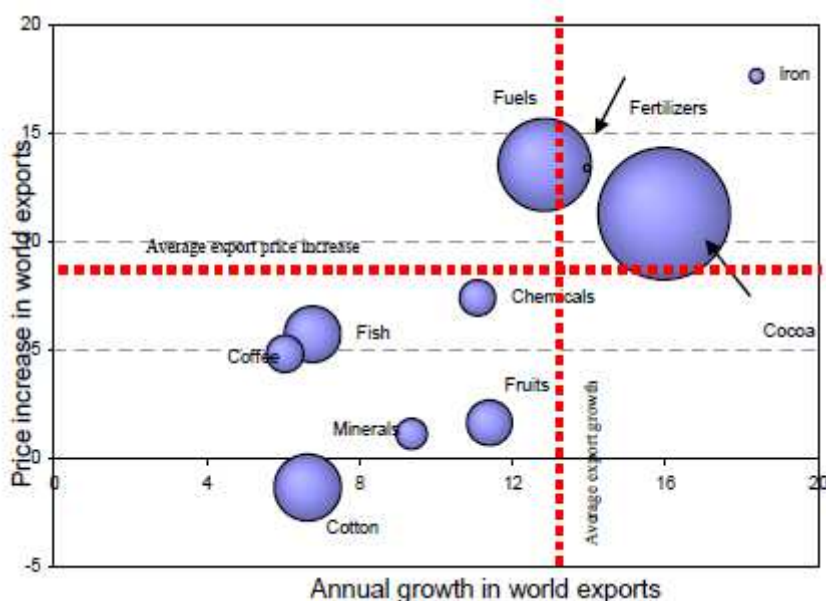
The Franc zone is a case in point. This is an original arrangement that is simultaneously a monetary arrangement (a currency area involving the Franc zone countries and the eurozone), and a regional trade agreement, which is the subject of a large literature (Gérardin, 1989; Haudeville, 1993; Hadjimichael and Galy, 1997; Gulde and Tsangarides, 2008; Claeys and Sindzingre, 2004, for a review of the issues). The Franc

zone pegs the exchange rate of its currency (the CFA franc) to the euro via an 'operation account' managed by the French Treasury; it relies on the compliance by African governments to a set of macroeconomic policies and benchmarks monitored by two central banks (each corresponding to a sub-zone, the 8 countries of the West African Economic and Monetary Union/WAEMU, and the 6 countries of the Central African Economic and Monetary Community/CEMAC); and it follows the UE model of multilateral surveillance (regarding a series of indicators, e.g., fiscal deficit). It is also a regional trade arrangement as each sub-zone is a free trade area that is integrated by a Common External Tariff.

Regarding the WAEMU, the fact of belonging to it did not modify the export structure of member countries: i.e. typically a limited share of manufactures, and the reliance on commodities - cocoa, coffee, cotton, gold, uranium, and, increasingly, oil. The trade policies of the zone that aimed at strengthening regional integration did not result in trade creation or the enhancing of growth and diversification in a spectacular way. Indeed, a key cause of the limited efficiency of such a trade arrangement is that member countries' economic and export structures are similar, and not complementary (they all rely on the export of primary products) (Sindzingre, 2000). This is why the theory of regional agreements argues that North-South arrangements are more efficient than South-South ones (Venables, 2003). The Franc zone could harness its original feature of being also a North-South currency union that pegs the currency of a group of developing countries to that of a group of developed ones. A potential advantage, such as currency convertibility, did not, however, boost intra-zone trade, i.e. trade involving the WAEMU and the eurozone (the share of the EU in WAEMU exports has declined since the 1990s, whereas intra-WAEMU trade has stabilised at about 11% of total trade over the 2000s (Goretti and Weisfeld, 2008). Indeed, the empirical evidence of a positive impact of a currency union on the union's intra-trade remains mixed (Rose, 2000; Glick and Rose, 2002; Persson, 2001; Kenen, 2002).

WAEMU countries broadly export to the same three main regions as other SSA countries, i.e. firstly the EU, then to the US and increasingly China, with these three regions trading the same types of goods with SSA: SSA mostly exporting fuels and importing machinery, transport equipment, and manufactured products (Wang and Bio-Tchané, 2008). These exports are mostly commodities that are inputs for American, EU, and Chinese industry and are traded in US dollars on international commodity and financial markets (mainly US and UK-based). Their prices are determined by many other factors than the monetary policies of SSA exporting countries, e.g. for oil or for agricultural commodities, international prices are determined by global demand, levels of inventories, the US dollar exchange rates, and US interest rates, and for agricultural products, the fob price may represent a small share of the final price. WAEMU countries' main imports are oil products, cereals, vehicles, machinery, and mechanical appliances: whereas exports are usually denominated in U.S. dollars, imports reflect trading partner currencies, especially the euro. Fluctuations of the euro thus affect exports and imports asymmetrically (Goretti and Weisfeld, 2008).

Figure 6: WAEMU: Export Performance by Product, 2000–05: limited profitability and diversification



Source: Goretti and Weisfeld (2008).

The pegging of the WAEMU currency to the euro may therefore have a limited impact on the structure of member countries' economies, and moreover it may be a constraint to the competitiveness of the industrial exports of the WAEMU vis-à-vis the exports of other developing countries that compete in the same product markets - especially Chinese products, whose import by SSA countries fostered by multilateral and regional trade openness policies threatens SSA industrial sectors (on SSA textile sectors, Kaplinsky and Morris, 2008, 2009). Indeed, the WAEMU monetary-trade regional arrangement has often been criticised for its rigidity and the risk of overvaluation for economies that strongly differ from those of the eurozone and even between themselves – though WAEMU monetary policies exhibit some autonomy and economies show some decoupling vis-à-vis the eurozone (Dufrenot, 2010). This overvaluation may have contributed to the persistent lack of competitiveness of Franc zone countries (Ramirez and Tsangarides, 2007), which may maintain them in their specialisation in commodities and be an ingredient of stagnation in a low equilibrium. The gains in CFA for WAEMU exporters depend on processes they do not control, i.e. the euro-dollar exchange rate, which may have positive effects on some exports but may have detrimental effects in the event of high volatility. Equally, foreign direct investments in the WAEMU are mostly resource-seeking (mainly in the petroleum and mining sectors), as in the rest of SSA (UNCTAD, 2009), and are therefore less driven by recipient countries' monetary policies.

Secondly, this limited room for manoeuvre of policies is due to the characteristics of the arrangements and policies themselves. The WAEMU may again be a case in point. The possibility that it might be an optimum currency area has been widely questioned, as the WAEMU is not likely to meet the criteria analysed by Mundell (1961): external shocks tend to be asymmetric, due to the heterogeneity of its member countries' market

structures (e.g., oil or food exporters and importers), adjustment to these shocks may not be flexible, due to the limited capacity of fiscal transfers among countries and the rigidity of commodity production, and the low level of intra-trade expresses the resilience of transaction costs (Tsangarides and Qureshi, 2006).

The internal features of such an arrangement and the associated monetary and trade policies have a limited capacity to substantially modify the transmission channels of the causes of vulnerability. The Franc zone arrangement gathers countries that are characterised by a low degree of financial deepening, which limits its implementation and efficiency. Financial sectors in SSA countries are among the shallowest in the world. Financial depth in the Franc zone is even shallower than in the rest of SSA, which Singh *et al.* (2009) explain by differences in institutional quality (such as the low quality of credit information, low enforcement of property rights, uncertainty, and poor judicial systems, among others): in 2006, credit to the private sector represented on average 16% of GDP in SSA countries (it is 35% in the rest of the developing world) and it amounted to about 14% in the WAEMU (7% in the CEMAC). For Singh *et al.* these problems seem more acute in the Franc zone, where enforcement costs represented more than 45% of a loan in 2008 compared with 30% in the rest of SSA. In the WAEMU short-term credit accounts for about 70% of credit to the private sector, hence member countries are less able to reap the full benefits of improvements in their financial systems: yet, panel data for WAEMU countries over the period 1995-2006 suggest that long-term bank financing has a greater impact on growth than short-term financing because long-term projects have higher returns adjusted for risks (Kpodar and Gbenyo, 2010). The limited room for manoeuvre of policies is also due to the weakness of their coercive capacity - the discrepancy between their *de jure* policies and institutions, and the *de facto* behaviour of governments, firms and individuals - which reflects the weakness of the governance of member countries.

The WAEMU impacts are therefore ambiguous. As such, in the short term it has not protected against the 2008 crisis, but has not intensified its effects or reinforced the formation of poverty traps. Debate remains intense as to whether in the long term this monetary-trade arrangement pegging the currency of a set of low-income countries to the euro and integrating them at the local level in a single currency-free trade area is beneficial or not for these countries. It may be argued that the WAEMU provides economic agents (investors, consumers) with additional credibility to the public policies of governments that otherwise often tend to reverse their policies or are even 'failed' states (Rodrik, 1995), and that it helps to stabilise the anticipations of individuals and firms, which has positive effects on investment decisions. *In fine*, the benefits and costs of rigidity but credibility on the one hand, policy flexibility on the other, are to be assessed on a case-by-case basis: they depend on the export structure (e.g., oil exporter, food importer, etc), the nature of the external shocks and their channels of transmission.

6. Reaching higher equilibria? Commodity-based traps fostered or countered by the combinations of several determinants

Causality does not mean determinism: the feedbacks between commodity-based traps and other factors

As mentioned above, commodity-based poverty traps are contested through the argument that some countries grounded their growth on the export of natural resources, oil or non-oil. Similarly, high commodity prices, especially oil prices, are said to have generated high growth rates in SSA. Equally, a criticism is that traps can be generated by several other mechanisms involving initial conditions and market failures (e.g., savings, human capital, among others).

These arguments do not refute commodity-based traps as they can be included in a broader understanding of the functioning of these traps. Indeed, the impact of commodity dependence on the formation of traps may be reoriented, countered or intensified, towards higher, or in contrast, lower equilibria, by many other factors, in particular, different types of ‘initial conditions’ – e.g., the credibility of economic and political institutions, the level of skills, or demographic and geographic characteristics. Positive feedback processes are instable: they may move in the right direction but when they move in the wrong direction, they “do not self-correct before they wreak serious economic damage” (David, 2007).

This endogeneity of commodity-based traps to the characteristics of their contexts constitutes what Barrett and Swallow (2006) name ‘fractal’ poverty traps, defined as traps in which multiple dynamic equilibria involve simultaneously the three scales of analysis – ‘micro’ (households, individuals), ‘meso’ (communities), ‘macro’ -, which self-reinforce themselves through feedback effects. Due to this simultaneous involvement of all levels - governments, markets and communities being simultaneously trapped in low-level equilibria - an economy that has stabilised in such an equilibrium has great difficulties in getting out of it and reaching the tipping point to a different one.

Institutions as key factors of the countering or reinforcing commodity-based traps

Countries which caught up with rich countries, as in East Asia, harnessed a variety of factors, such as human capital and capacity to innovate (Thorbecke and Wan, 2004; Kim, 2006), in contrast with most commodity-exporting low-income countries, plagued by low levels of human capital together with labour markets unable to absorb the educated workforce, which perpetuate segmented market structures, and impede the possibility of spillover effects - oil countries being typical examples. Commodity-based low-income countries not only are not endowed with the factors that endogenously cause growth, but moreover, are endowed with another factor, i.e., primary products, which generate disincentives for these growth-enhancing factors.

In particular, countries which caught up developed specific sets of institutions and in turn were helped by them, whether these countries lacked natural resources (e.g. Asian developmental states) or grounded their economy on primary products. The exact form of institutions, which would have a positive impact on growth, is difficult to assess *ex*

ante, since growth and a determinant of growth such as institutions are endogenous, which fosters cumulative and non-linear processes (Engerman and Sokoloff, 2003; Acemoglu and Robinson, 2006). Institutions transform the impact of market structures on growth and combine with them (Sindzingre, 2007b). Some institutions, especially inequality, when combined with endowments regarding the resource or labour abundance, may create poverty traps, as shown by Engerman and Sokoloff (2006) for Latin America – typically, institutions that lock-in social groups (Hoff and Sen, 2006; Sindzingre, 2007a). Such institutions, which implement “highly unequal divisions of the social product”, persist even if they convey no efficiency advantages because they constitute “self-enforcing conventions” (Bowles, 2006).

Low or high equilibria as outcomes of self-enforcing combinations of market structures and institutions

Institutions are key elements of the feedback processes that constitute a commodity-poverty trap. Poor institutions combined with dependence on commodity exports maintain slow growth. Slow growth combined with commodity dependence maintains poor institutions. Commodity dependence, volatile commodity prices and volatile growth rates maintain poor institutions, e.g., predation, cronyism, rent-seeking, the poor quality of which, in turn, reinforces the negative effects of commodity dependence (Mehlum *et al.*, 2002; Robinson *et al.*, 2002; Auty, 2001; 2006).

Symmetrically, institutions may shape the exploitation of natural resources in a way that prevents the formation of a trap, and even trigger a mode of harnessing natural resources that fosters industrialisation. For example, in the end-19th century United States, specific institutions transformed the endowment in natural resources (especially minerals) into engines of industrialisation and increasing returns: in particular, an appropriate legal system, geological research, investment in the infrastructure of public knowledge, and an education system linked to industry (Wright, 1990; David and Wright, 1997). Mineral abundance was here “an endogenous historical phenomenon driven by collective learning, increasing returns, and an accommodating legal environment” (Wright and Czelusta, 2002).

Likewise, Norway reached a high per capita income level because the risks entailed by the export of oil have been countered by the consolidation of institutions focused on a long time horizon and able to lock-in governments’ commitments and policies (‘meta-institutions’, Acemoglu, 2003), in order to prevent a worse lock-in, i.e. a fall into a low equilibrium resulting, from, e.g., Dutch disease (‘good institutions’ and ‘clever policies’, as explained by Cappelen and Mjoset, 2009, such as the fund for future generations - the Petroleum Fund -, Mehlum *et al.*, 2008). Similarly, a combination of appropriate policies and institutions was able to modify the potentially negative effects of commodities in Scandinavian countries (Blomström and Kokko, 2003): when institutions are ‘producer-friendly’, more natural resources may increase income (Mehlum *et al.*, 2006). When such institutions and policies are lacking, this creates initial conditions that trigger or accelerate the falling in a commodity-created trap, such as political instability, predatory rulers and high inequality, as is often the case in SSA.

Therefore, different equilibria, including bifurcations towards growth, are possible. Low equilibria are neither created by locking-in institutions only (as shown by the growth of highly unequal countries such as Brazil) nor by commodity dependence only: they result from combinations, which involve, in particular, commodity-based export-structures, low levels of income and education, inequality, as in many SSA countries (Blattman *et al.*, 2004). More than elements taken in isolation, ‘combinations matter’.

7. Conclusion

The negative effects stemming from market structures characterised by commodity dependence due to commodity price volatility, had been demonstrated half a century ago. They were intensified by the financialisation of commodity markets over 2003-08 and were confirmed by the 2008-09 crisis. The paper has argued that the theoretical legacy of the concept of the poverty trap remains a relevant framework for the understanding of these processes.

The argument of the paper is that their past growth experience as well as the ongoing effects of the 2008-09 global recession confirm that Sub-Saharan Africa low-income commodity-dependent countries exhibit the key properties of the concept of the poverty trap: attraction into low equilibria; cumulative causation and increasing divergence; thresholds, small events’ irreversible effects, lasting effects created by external events; and the transmission of shocks and trapping processes to micro levels. Commodity-dependent low-income countries exhibit market characteristics that differ from the few developing countries that succeeded in triggering growth and reaching higher equilibria, e.g. in East Asia.

Against arguments that call into question the negative effects of commodity dependence or the very existence of traps, the paper has underscored that causalities do not constitute determinism: commodity-based market structures combine with other determinants of growth, in particular local institutions, which may aggravate the negative impact or, on the contrary, transform causal processes towards growth. As these other determinants are endogenous to growth, however, it is unlikely that institutions have this latter capacity in low-income countries: this endogeneity is indeed one of the features of poverty traps.

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